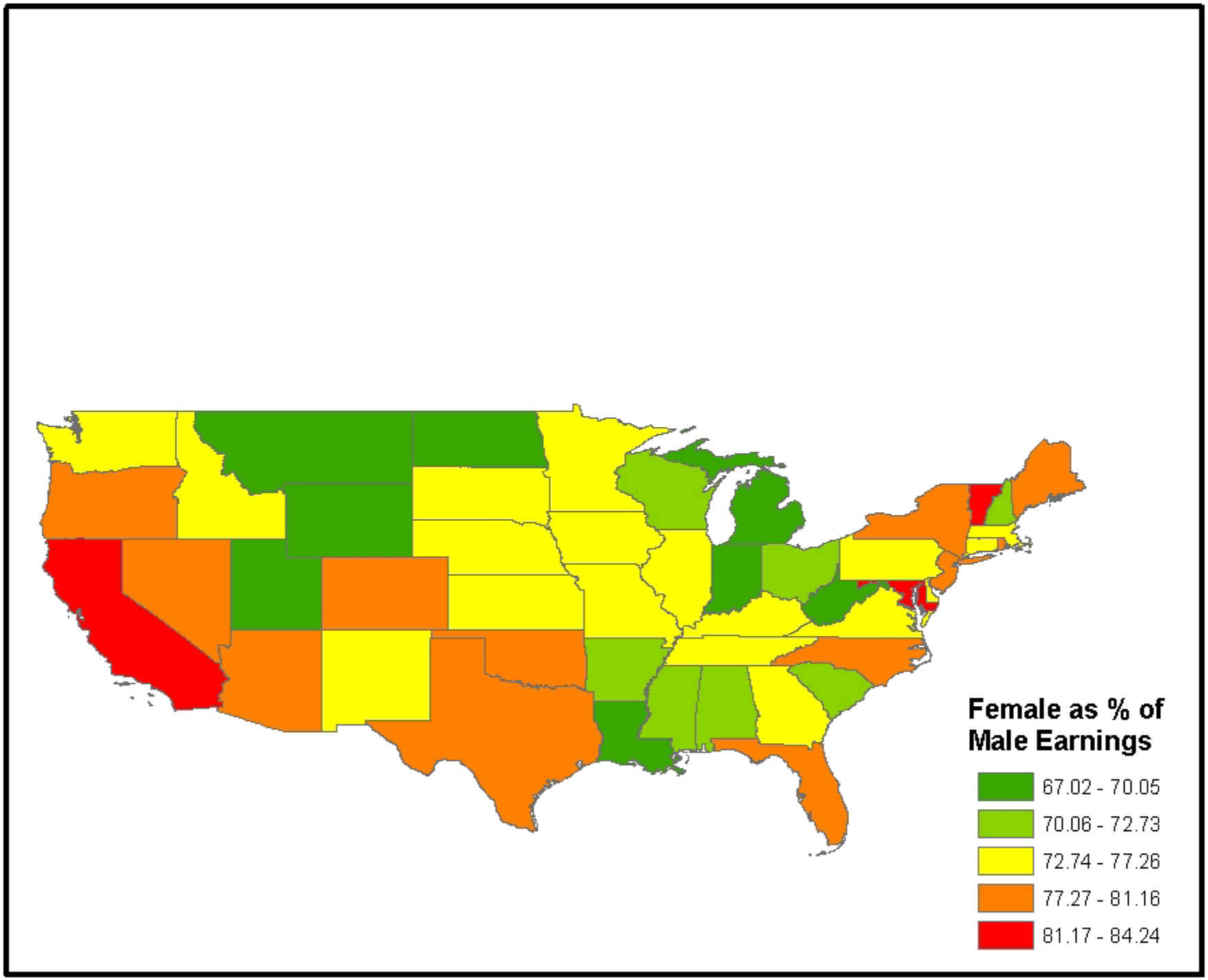
The U.S. and Montana Gender Wage Gaps

Brad Eldredge Ph.D.
Research and Analysis Bureau
Montana Department of Labor and Industry

Montana Gender Wage Gap

- The average women working full-time year round makes 67% of what the average man working full time year round makes in MT.

- This ranks MT last in the nation


Female as % of Male Earnings
67.02 - 70.05
70.06 - 72.73
72.74 - 77.26
77.27 - 81.16
81.17 - 84.24

What Determines Wages?

- Wages are a function of human capital
  - level of education
  - labor market experience
- Unfortunately, wages are also a function of race
- What about gender?

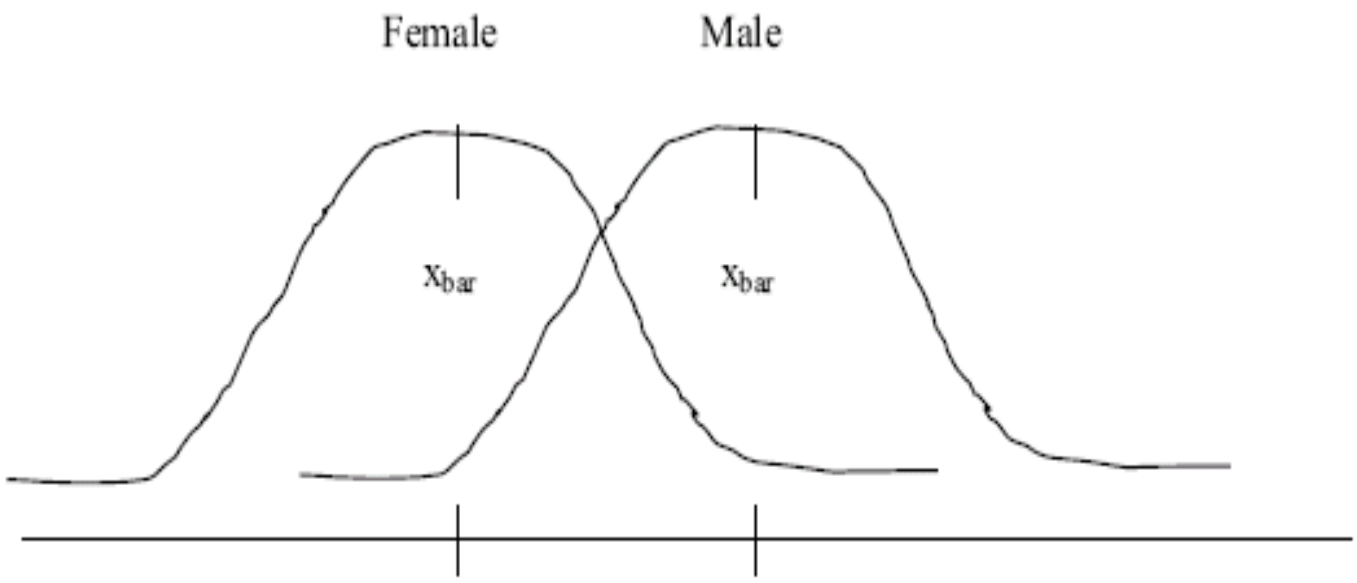
Is there gender wage discrimination?

Discrimination = Two identical workers with the same human capital characteristics earning different wages based on their race or gender

Econometrics helps us determine if there is discrimination

Wage Distribution in the U.S.

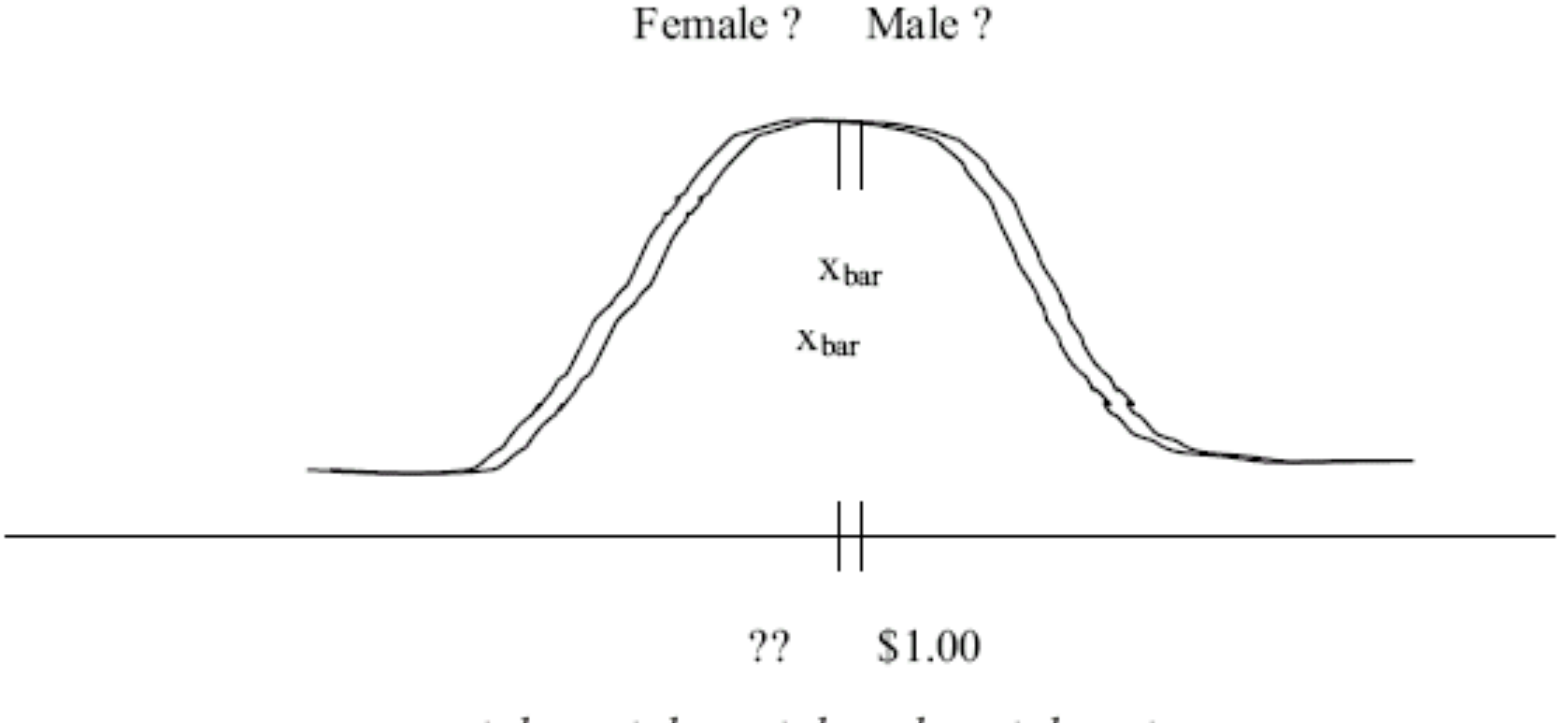
Figure 1. Distribution of average wages by gender



$$y = a + b_1 x_1 + e$$

Wage Distribution in the U.S.

Figure 2. Distribution of average wages by gender, controlling for equivalent human capital



$$y = a + b_1x_1 + b_2x_2 + b_3x_3\ b_4x_4 + b_5x_5 + e$$

What Econometrics tells us

- After controlling for human capital differences
- 60-90% of the pay gap goes away (Blau and Kahn 2000)

Male and Female age-experience profile

- The average man has more experience than the average woman

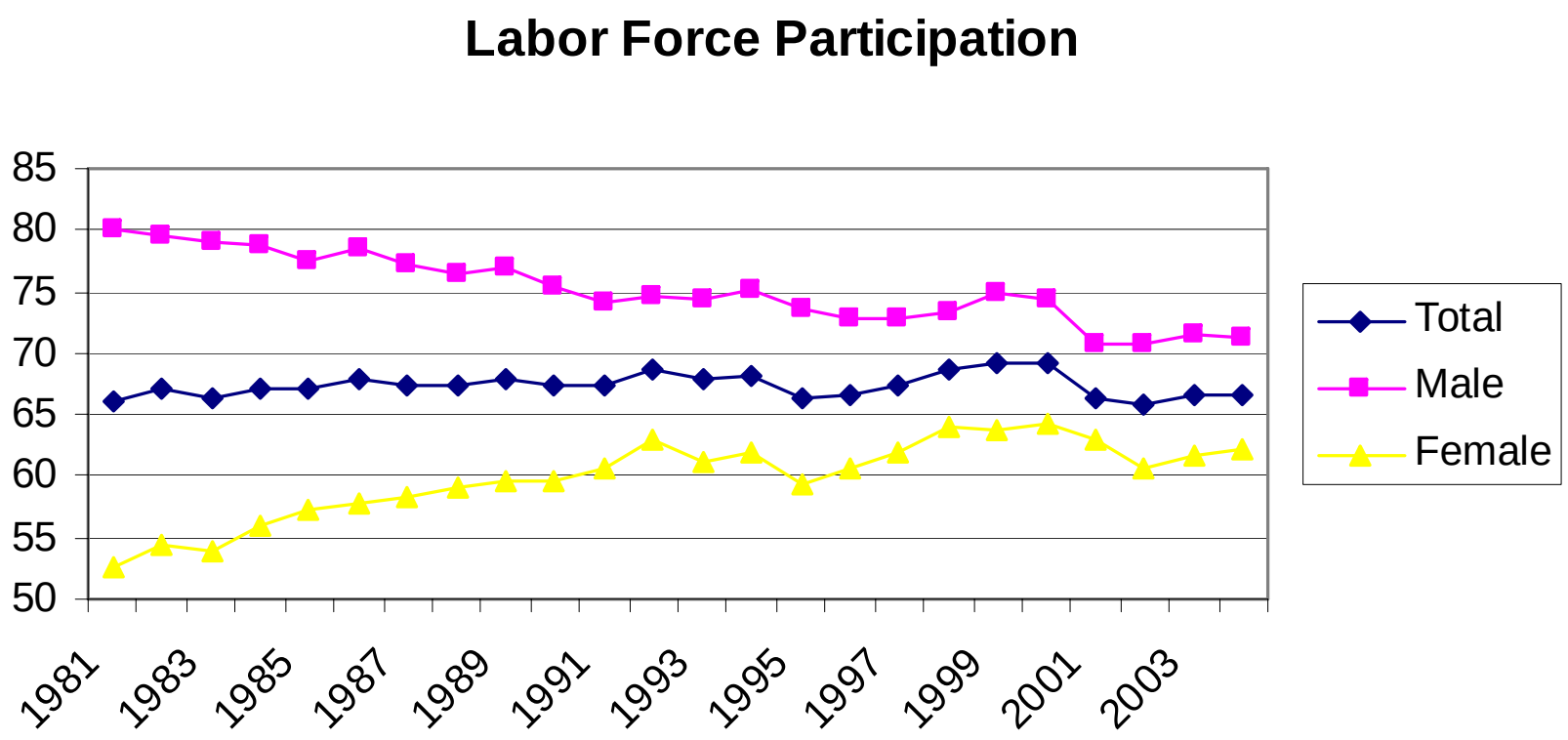
- 6.1 years more FT experience in the population 25 to 64 (Shannon and Kidd)

- Gender differences in levels of experience are key to the wage gap

Factors important to female labor force experience

- Age
- Education
- Race
- Number of children

Montana's Labor Force Participation Rate by Sex



Source: Bureau of Labor Statistics: Geographic Profile of Employment and Unemployment

Differences in age structure, MT vs. U.S.

	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
MT Women	10.8%	10.2%	11.3%	15.0%	16.2%	15.0%	12.0%	9.4%
U.S Women	12.3%	13.0%	13.4%	14.9%	14.4%	12.8%	10.9%	8.4%
MT Men	11.7%	10.6%	11.1%	14.4%	15.4%	15.1%	12.4%	9.3%
US Men	13.0%	13.5%	13.8%	14.9%	14.2%	12.4%	10.4%	7.8%

Differences in educational attainment by gender in MT

Educational Attainment		25 to 34	35 to 44	45 to 64
Less than HS	Women	7.4%	6.3%	7.4%
	Men	8.0%	9.4%	7.7%
HS Only	Women	22.8%	27.3%	30.5%
	Men	32.5%	30.4%	32.6%
Some College	Women	36.1%	33.9%	33.9%
	Men	35.7%	31.7%	28.8%
Bachelor's or higher	Women	33.7%	32.5%	28.3%
	Men	23.8%	28.5%	30.9%

Differences in educational attainment by gender in MT-2000 version

Educational Attainment		25 to 34	35 to 44	45 to 64
Less than HS	Women	7.7	7.5	9.5
	Men	8.9	9.8	9.4
HS Only	Women	25.5	30.2	30.3
	Men	30.9	35.4	28.8
Some College	Women	38.7	36.0	34.3
	Men	35.1	31.9	31.4
Bachelor's or higher	Women	28.1	26.3	25.8
	Men	25.1	23.0	30.4

Male and Female Human Capital

- Men have more full time labor market experience
- Women have more education
- Men and women may invest in different kinds of human capital (Spivey 2005)
- As the population ages, the average experience gap widens

Hours Worked

Marital Status	Ave. Hours	Ave. FT Hours
Men, 16 and over		
Married	43.5	44.8
Widowed, Divorced, Separated	42.0	43.7
Never Married	37.7	42.3
Women, 16 and over		
Married	36.2	40.9
Widowed, Divorced, Separated	38.0	41.5
Never Married	34.5	41.0

Decomposing the Wage Gap

- Decomposition analysis allows us to see if the industry or occupational distribution of males vs. females affects the gap.

- Uses LED (industry) and Census (occupational) data.

Table 1: Female Wage Gaps by Industry[1]					
2004					
Industry	**Employment**		**Wages**		**Gap**
	M	*F*	*M*	*F*	*%*
	#		*$/Month*		
Agriculture, Forestry, Fishing and Hunting	3,366	1,055	2,481	1,340	46.0
Mining	4,553	514	4,277	3,064	28.4
Utilities	2,618	853	5,561	3,392	39.0
Construction	20,818	3,268	2,910	1,929	33.7
Wholesale Trade	11,948	4,109	3,385	1,904	43.7
Information	4,172	3,523	3,563	2,372	33.4
Finance and Insurance	4,201	10,477	5,255	2,337	55.5
Real Estate and Rental and Leasing	2,794	2,806	2,058	1,559	24.2
Professional, Scientific, and Technical Services	7,574	8,934	4,463	2,226	50.1
Administrative and Support Services	7,803	6,383	2,111	1,441	31.8
Educational Services	13,732	26,806	3,079	2,159	29.9
Healthcare and Social Assistance	10,135	40,656	4,497	2,036	54.7
Arts, Entertainment, and Recreation	4,278	5,139	1,696	1,072	36.8
Accommodation and Food Services	17,060	26,248	1,156	918	20.5
Other Services	7,158	8,565	2,251	1,276	43.3
Public Administration	13,344	13,316	2,963	2,284	22.9
Manufacturing	14,770	4,626	3,288	2,058	37.4
Retail Trade	26,956	28,844	2,344	1,397	40.4
Transportation and Warehousing	7,810	2,769	2,753	1,822	33.8
Total	185,556	199,536	2,977	1,807	39.3

Hypothetical world where women and men work in the same industries

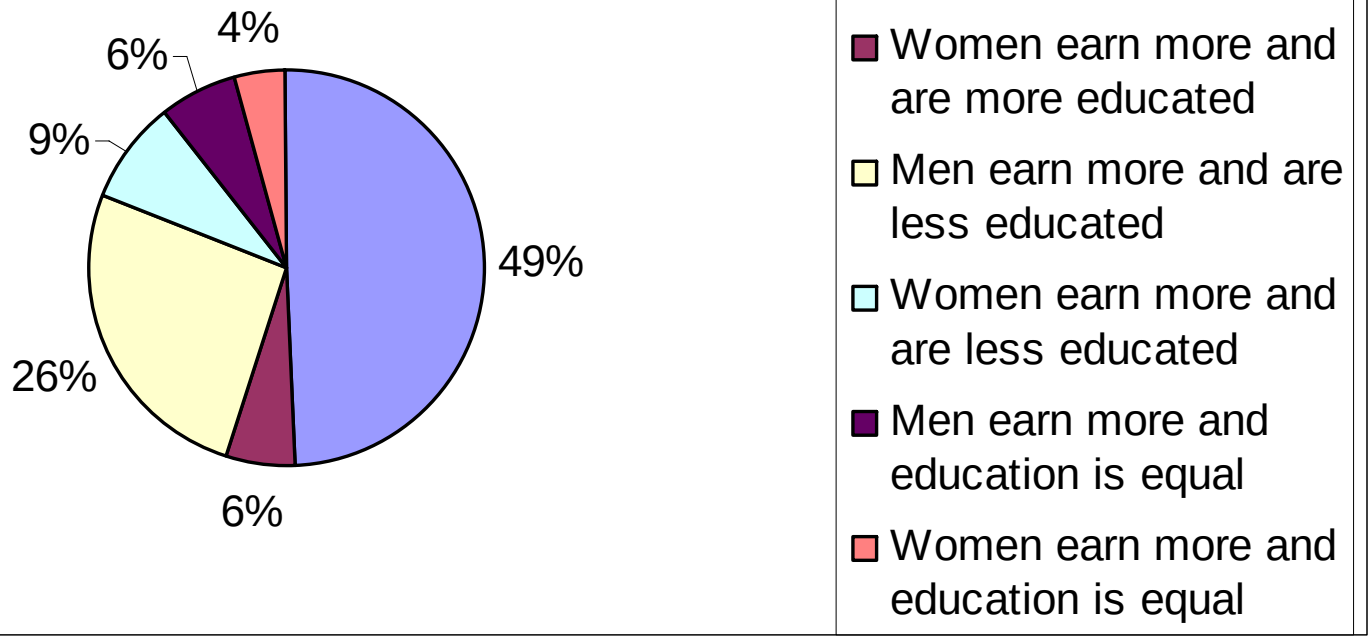
- All industries now employ 48% men and 52% women.
- Wages gaps within industries are held constant
- Result: the pay gap actually increased (from 60.7% to 59.6%)
- Conclusion: It's the intra-industry gaps that matter, not the distribution between industries

Hypothetical world where women and men earn the same $$$ in each industry

- In each industry, women and men earn the industry average salary
- Employment of men and women in each industry left at their “true” values
- Result: Most of the gap goes away (from 60.7% to 92.9%)

What about occupational data?

Figure 1: Occupational Earnings by Education and Gender



Hypothetical world where women and men work in the same proportion in each occupation

- In each occupation, 40% are women and 60% are men
- Wages of men and women in each industry left at their “true” values
- Result: Some of the gap goes away (from 69.5% to 74.1%)

Possible future developments

- Recent trends indicate increasing returns to education (skills)
- Women benefit from higher returns to skills
- More women are enrolling in college than men

Table 1. **Median earnings of women as a percent of men's earnings and percent distribution of employment, by major field of study, degree level, and age group, 1993**

Major field of study and degree level	Age 25–34				
	Median annual earnings		Women's earnings as percent of men's in same major	Percent distribution[1]	
	Women	Men		Women	Men
Bachelor's degree					
All major fields	$29,660	$35,694	83	100. 0	100.0
Accounting	35,744	39,097	91	7.7	7.8
Agriculture	28,177	31,830	89	1.1	2.3
Architecture/environmental design	31,370	33,048	95	.5	1.1
Biological/life sciences	29,401	33,129	89	2.9	–
Business, except accounting	30,163	34,938	86	21.1	26.3
Chemistry	34,506	35,398	97	.6	.8
Communications	27,317	30,768	89	7.2	5.0
Computer and information sciences	38,966	41,314	94	3.6	6.0
Criminal justice/protective service	26,037	29,401	89	1.2	1.7
Economics	33,597	36,656	92	1.3	2.1
Education, including physical education	24,276	26,366	92	13.0	3.7
Engineering	43,274	43,518	99	2.6	14.5
Engineering-related technologies	36,300	38,688	94	.3	3.3
English language and literature	27,388	28,503	96	3.0	1.4
Foreign languages and linguistics	29,079	28,832	101	1.2	.4
Health/medical technologies	32,526	–	–	.9	–
History	25,989	30,418	85	1.1	1.7
Liberal arts/general studies	30,672	31,386	98	1.2	.8
Mathematics	35,052	36,828	95	1.3	1.7
Nursing	35,923	–	–	4.7	–
Pharmacy	47,506	48,979	97	.5	.5
Political science and government	28,507	33,271	86	2.1	2.7
Psychology	26,339	30,657	86	4.3	1.7
Social work	23,333	–	–	1.3	–
Sociology	25,763	29,142	88	1.6	.8
Theology, philosophy, and religion	–	–	–	–	–
Visual and performing arts	24,643	25,633	96	5.1	3.3

Future of the gender wage gap

- Shannon and Kidd (2003) project that at least 75% of the current gap will still be there in 2040

- "Progress" will depend on changing societal values

Results from the American Time-Use Survey

- Typical Day: 54% of women and 19% of men did “housework.”
- 66% of food prep vs. 35% of men
- In household w/children under 6

-Women spend 2.7 hours providing childcare vs. 1.2 hours for men

- Married women spent 4.5hrs on leisure vs. 5.1 hours for married men

Contact Information

Brad Eldredge

(406)444-5474

beldredge@mt.gov